



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-292



### Global Positioning System III (GPS III)

As of FY 2015 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Common Acronyms and Abbreviations

Acq O&M - Acquisition-Related Operations and Maintenance  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
BA - Budget Authority/Budget Activity  
BY - Base Year  
DAMIR - Defense Acquisition Management Information Retrieval  
Dev Est - Development Estimate  
DoD - Department of Defense  
DSN - Defense Switched Network  
Econ - Economic  
Eng - Engineering  
Est - Estimating  
FMS - Foreign Military Sales  
FY - Fiscal Year  
IOC - Initial Operational Capability  
\$K - Thousands of Dollars  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MILCON - Military Construction  
N/A - Not Applicable  
O&S - Operating and Support  
Oth - Other  
PAUC - Program Acquisition Unit Cost  
PB - President's Budget  
PE - Program Element  
Proc - Procurement  
Prod Est - Production Estimate  
QR - Quantity Related  
Qty - Quantity  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
Sch - Schedule  
Spt - Support  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting

## Program Information

**Program Name**

Global Positioning System III (GPS III)

**DoD Component**

Air Force

## Responsible Office

**Responsible Office**

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**Date Assigned** June 13, 2013

## References

**SAR Baseline (Production Estimate)**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 31, 2011

**Approved APB**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 31, 2011

## Mission and Description

The Global Positioning System (GPS) is a satellite-based radio navigation system that provides worldwide military and civil users satellite signals they can process to determine accurate position, velocity, and time. On May 8, 2000, the Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) approved entry into the initial modernization efforts for Navstar GPS. GPS III, an Acquisition Category 1D program, is the next generation Space Vehicle (SV) that will provide significant enhancements to complete the modernization of the constellation. GPS III complies with 10 United States Code (USC) § 2281, ensuring the continued sustainment and operation of GPS for military and civilian purposes, and 42 USC § 14712, continuing as an international standard available on a continuous worldwide basis free of direct user fees.

As captured in a November 6, 2006 Memorandum, the Joint Requirement Oversight Council validated and endorsed the GPS III Capability Development Document for vehicles 01-08, validating the requirements for the GPS III program. As a result, the GPS Directorate is on contract to deliver GPS III SV03 through SV08, as reflected in this SAR. Follow-on vehicles 09+ will be procured in a future increment(s) and are not reflected in this SAR.

The primary GPS III missions are positioning, navigation, and precise time transfer. GPS provides strategic and tactical support to the following DoD missions: Joint Operations by providing capabilities for Position Navigation and Timing (PNT); Command, Control, Communications, and Intelligence; Special Operations; Military Operations in Urban Terrain; Defense-Wide Mission Support; Air Mobility; and Space Launch Orbital Support.

For military users, the GPS III program provides Precise Positioning Service (PPS) to military operations and force enhancement. It also provides increased anti-jam power to the earth coverage M-Code signals and anti-exploitation techniques in order to prevent unauthorized use of the GPS PPS signal. Additionally, the program will support, via a hosted payload, the United States Nuclear Detonation Detection System mission for worldwide monitoring and detection of nuclear events.

For civilian users, the GPS III program provides a Standard Positioning Service to a broad spectrum of civil users. It will also transmit a new civil signal (L1C), which is compatible with the European Galileo satellite navigation system signal, E1. L1C is also compatible with those signals planned for broadcast on Japan's Quasi-Zenith Satellite System, a system meant to augment GPS services. Once implemented, the common civil signal will be jointly broadcast by up to 60 satellites from both GPS and Galileo constellations, further increasing the accuracy and availability of civil PNT solutions.

## Executive Summary

The GPS III program office submitted a Program Deviation Report to the Office of the Secretary of Defense (OSD) declaring a schedule breach of at least six months to the Space Vehicle (SV)01 Available for Launch (AFL) APB threshold. The Government's estimate for SV01 Navigation Payload delivery is now October 1, 2014, driven by delays to the Mission Data Unit delivery. These delays caused the Government estimate for SV01 Available for Launch to slip to January 2016. This date accounts for the possibility of additional Navigation Payload Element delays and includes a more conservative thermal vacuum test duration not included in the contractor's schedule. Because of the delay to SV01, the AFL dates for SV02 and SV08 have slipped to January 2017 and October 2019 respectively.

The Mission Data Unit (MDU) is the pacing item within the Navigation Payload Element (NPE) development and is driving the program critical path. During MDU Engineering Development Unit (EDU) testing, the contractor discovered an internal Radio Frequency (RF) Isolation issue that took a significant amount of time and technical effort to resolve. However, after much effort, the contractor was able to achieve performance to specifications in the EDU through the innovative use of RF absorptive material inside the MDU. Although the MDU RF isolation issue delayed entry into acceptance testing, performance is now compliant and the SV01 MDU flight unit is undergoing pre-acceptance testing. Risk mitigation options, for implementation if required, are in work to reduce risk of further MDU performance issues during testing, including a circuit card respin to improve grounding and incorporate engineering changes. While the flight MDU is preparing to enter formal acceptance testing, the RF isolation issue will not be formally closed until the MDU successfully completes thermal vacuum testing. Estimated formal acceptance test completion date for the SV01 MDU is now May 2014. Delays to completion of MDU Flight Software and MDU Test Software development and testing were also factored into this new estimated completion date. These delays were primarily caused by over subscription of test assets while the contractor was simultaneously resolving MDU hardware issues.

While not on the critical path, the contractor also had to address a number of payload transmitter failures. An issue involving manufacturing and test failures of a key payload L1 signal transmitter component and an isolator/combiner were resolved. The program office contracted with an alternate supplier, who successfully built all SV01 flight and qualification L1 signal transmitter units and completed qualification testing on June 28, 2013, and has now successfully built and delivered all SV01 flight and qualification units. The contractor also corrected several process design issues found during transmitter testing which required all the units to be reworked.

In February 2013, the SV01 bus achieved Initial Power Turn-On (IPTO) and the team successfully completed a third simulation of GPS III Launch and Checkout System readiness exercise between GPS III and GPS Next Generation Operational Control System (OCX) in August 2013. Over 90% of the bus has now been delivered and integrated on the GPS III satellite. The remaining bus assemblies are on-track for delivery and integration prior to space vehicle-level core mate. The overall program continues to make progress on the GPS III Non-Flight Satellite Testbed (GNST), on SV01 development, and on the GPS III Satellite Simulator (GSS).

The GNST, non-flight spacecraft pathfinder, is the first GPS III-type vehicle through the assembly, integration and test flow, and serves as a major risk-reduction activity for SV01. Following completion of the GNST Navigation Payload thermal vacuum testing in November 2012, which discovered several important issues, the GNST underwent preparations for a satellite-level System Module Functional Test in February 2013 with a final System Module and Core Mate in March 2013. The GNST was then shipped to Cape Canaveral Air Force Station on July 19, 2013. In addition to extensive Cape pathfinder processing, the GPS III contractor executed the first of three planned intersegment integration Mission Readiness Tests between GPS III and OCX. GNST demonstrated the ability for GPS III to communicate with OCX Block 0's GPS III Launch and Checkout System (LCS). The GNST-to-LCS compatibility and integration test was successfully completed on August 29, 2013. Additionally, GNST Payload

functional and crosslink testing were completed in October 2013. The GNST has completed all testing at the Cape and will be shipped back to the GPS Processing Facility in Denver, CO.

In addition, the GPS III prime contractor continued an on-track delivery of several iterations of the GSS to the OCX contractor in June 2011, November 2011, and August 2012. Final acceptance of GSS hardware and software was completed on May 22, 2013 with no significant software-related issues. These updates were important steps for continued cross-segment enterprise integration to ensure the GPS III satellite and OCX command and control system smoothly operate as one system of systems.

In May 2012, GPS III received direction to convert the unexecuted SV production Cost Plus Incentive Fee/Award Fee (CPIF/AF) options to Fixed Price Incentive Fee (FPIF) price incentive options beginning with SV05. Since that time, due to continued unresolved development issues with the Navigation Payload (the critical development item impacted), FPIF timelines became problematic due to lack of time-tested and factory-proven production costs, which had originally been assumed to be available before negotiations started. Due to these reasons, in December 2013 the GPS III program received permission from the Milestone Decision Authority (USD/AT&L) to exercise the current CPIF/AF contract options for SV05-06.

Currently, the gap between SV01 Launch and OCX Block 1 availability is 1-2 years based on an SV01 launch of September 2016. The first nine months for SV01 will be used for an extended checkout period using the Launch and Checkout Capability. After that, the directorate is working parallel paths to be able to operate the SV after checkout is complete providing a contingency operation capability if needed.

Although the program office recognizes a schedule breach, the Air Force has sufficient budget margin to support SV01 and SV02 deliveries. In addition, the program expects to meet all key requirements and performance parameters for this first-of-a-kind, modernized third-generation satellite.

There are no significant software-related issues with this program at this time.



## Threshold Breaches

### APB Breaches

<b>Schedule</b>		<input checked="" type="checkbox"/>
<b>Performance</b>		<input type="checkbox"/>
<b>Cost</b>	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
<b>O&amp;S Cost</b>		<input type="checkbox"/>
<b>Unit Cost</b>	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

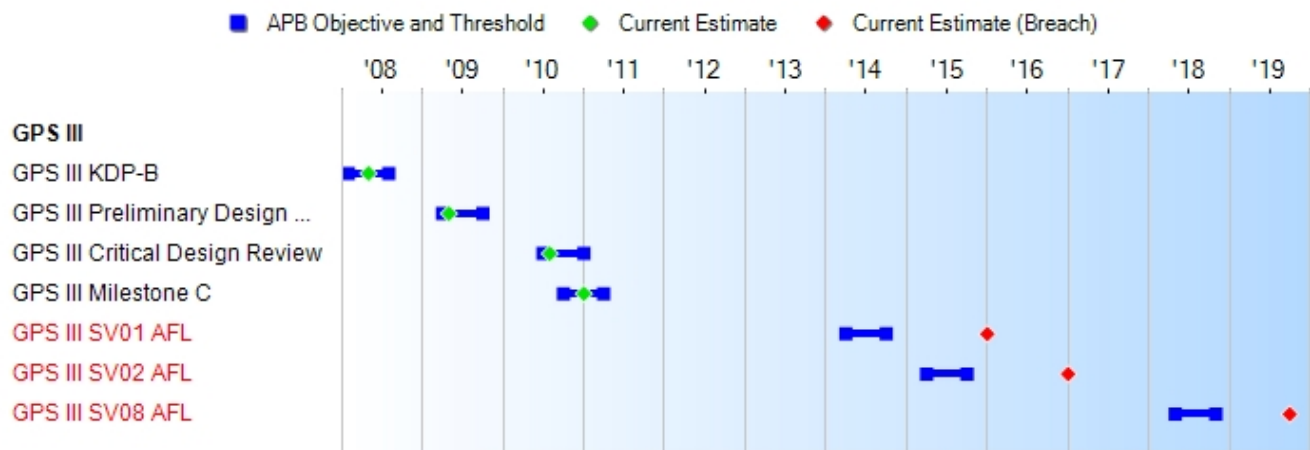
### Nunn-McCurdy Breaches

<b>Current UCR Baseline</b>		
	PAUC	None
	APUC	None
<b>Original UCR Baseline</b>		
	PAUC	None
	APUC	None

### Explanation of Breach

The Space Vehicle (SV)01 Available for Launch (AFL) date has slipped from October 2014 to January 2016, resulting in an APB breach. The Air Force submitted a Program Deviation Report on November 5, 2013 and was sent to Office of the Secretary of Defense (OSD) on December 11, 2013. The new January 2016 date accounts for additional Navigation Payload Element (NPE) delays and a more conservative thermal-vacuum testing duration not included in the contractor's schedule. Although, the program office recognizes a schedule breach, the Air Force has sufficient budget margin to support SV01 delivery past the current APB threshold date of October 2014. Because of the delay to SV01, the AFL dates for SV02 and SV08 have slipped to January 2017 and October 2019, respectively. The Air Force is in the process of updating the APB to address these schedule breaches.

## Schedule



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate
GPS III KDP-B	FEB 2008	FEB 2008	AUG 2008	MAY 2008
GPS III Preliminary Design Review	APR 2009	APR 2009	OCT 2009	MAY 2009
GPS III Critical Design Review	JUL 2010	JUL 2010	JAN 2011	AUG 2010
GPS III Milestone C	OCT 2010	OCT 2010	APR 2011	JAN 2011
GPS III SV01 AFL	APR 2014	APR 2014	OCT 2014	<b>JAN 2016<sup>1</sup></b> (Ch-1)
GPS III SV02 AFL	APR 2015	APR 2015	OCT 2015	<b>JAN 2017<sup>1</sup></b> (Ch-2)
GPS III SV08 AFL	MAY 2018	MAY 2018	NOV 2018	<b>OCT 2019<sup>1</sup></b> (Ch-2)

<sup>1</sup>APB Breach

### Change Explanations

(Ch-1) GPS III SV01 AFL was delayed from October 2014 to January 2016. The change is due to the significant radio frequency coupling issues that have been encountered within the MDU, delaying the delivery of the navigation payload. This new date is based on a Government Independent Schedule Risk Assessment accounting for additional time to rework and increased margin for Thermal Vacuum testing.

(Ch-2) GPS III SV02 AFL was delayed from April 2015 to January 2017, and GPS III SV08 AFL was delayed from May 2018 to October 2019, due to the delay in the delivery of SV01.

**Acronyms and Abbreviations**

AFL - Available for Launch

GPS - Global Positioning System

KDP - Key Decision Point

MDU - Mission Data Unit

SV - Space Vehicle

## Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Backward Compatibility	All modifications made to the existing GPS Space Segment and Control Segment shall allow continued operation of existing ICD- GPS-200 and 700, IS- GPS-705, and SS- GPS-001 compliant UE and continued operation of legacy receivers (to include Federal augmentation system receivers).	All modifications made to the existing GPS Space Segment and Control Segment shall allow continued operation of existing ICD- GPS-200 and 700, IS- GPS-705, and SS- GPS-001 compliant UE and continued operation of legacy receivers (to include Federal augmentation system receivers).	All modifications made to the existing GPS Space Segment and Control Segment shall allow continued operation of existing ICD- GPS-200 and 700, IS- GPS-705, and SS- GPS-001 compliant UE and continued operation of legacy receivers (to include Federal augmentation system receivers).	TBD	All modifications made to the existing GPS Space Segment and Control Segment shall allow continued operation of existing ICD- GPS-200 and 700, IS- GPS-705, and SS- GPS-001 compliant UE and continued operation of legacy receivers (to include Federal augmentation system receivers).
User Range Error (meters)	.2	.2	1.1	TBD	1.0
Net-Ready	The system must fully support execution of all joint operational activities identified in the applicable joint and system integrated architectures	The system must fully support execution of all joint operational activities identified in the applicable joint and system integrated architectures	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures	TBD	The system must fully support execution of all joint operational activities identified in the applicable joint and system integrated architectures

	and the system must satisfy the technical requirements for Net-Centric military operations.	and the system must satisfy the technical requirements for Net-Centric military operations.	and the system must satisfy the technical requirements for transition to Net-Centric military operations.		and the system must satisfy the technical requirements for Net-Centric military operations.	
Satellite Availability	0.984	0.984	0.984	TBD	0.984	
Boosted Earth-Coverage M-Code Power (dBW)	-148	-148	-153	TBD	-151.7	(Ch-1)
Minimum L1C Signal Power	-157	-157	-157	TBD	-157	
Position and Time Transfer Integrity (Probability of Misleading SIS Information)	0.00000001	0.00000001	0.00001	TBD	0.00000001	

#### Requirements Source

Capability Development Document (CDD) for Increment A dated November 6, 2006

#### Change Explanations

(Ch-1) The current estimate of the Boosted Earth Coverage M-Code Power (dBW) changed from -153 to -151.7. This change was based on updated transmitter testing.

#### Acronyms and Abbreviations

dBW - Decibel-watt  
GPS - Global Positioning System  
ICD - Interface Control Document  
IS - Interface Specifications  
M-Code - Military Code  
SIS - Signal in Space  
SS - System Specifications  
UE - User Equipment

## Track to Budget

### RDT&E

Appn	BA	PE
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Air Force 3600 07 0305265F

Project
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Name
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67A019

(Shared)

Air Force 3600 04 0603421F

Project
---------

Name
------

644993

(Sunk)

The shared funding line includes funding for Space Vehicle (SV) 09+; beginning in FY 2008, however the SV09+ funds are not included in this SAR.

### Procurement

Appn	BA	PE
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Air Force 3020 05 0305265F

Line Item
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Name
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GPSIII

(Shared)

The shared funding line includes funding for SV09+ beginning in FY 2014 (long lead) which is not reported in this SAR.

## Cost and Funding

### Cost Summary

#### Total Acquisition Cost and Quantity

Appropriation	BY2010 \$M			BY2010 \$M	TY \$M		
	SAR Baseline Prod Est	Current APB Production Objective/Threshold	Current Estimate		SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	2623.9	2623.9	2886.3	2722.3	2653.8	2653.8	2788.0
Procurement	1519.0	1519.0	1670.9	1547.7	1616.0	1616.0	1716.5
Flyaway	--	--	--	1283.0	--	--	1389.3
Recurring	--	--	--	1283.0	--	--	1389.3
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	264.7	--	--	327.2
Other Support	--	--	--	264.7	--	--	327.2
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	4142.9	4142.9	N/A	4270.0	4269.8	4269.8	4504.5

Confidence Level for Current APB Cost 60% -

The Milestone C Acquisition Program Baseline (APB) was established at the 60% confidence level. This estimate is built upon a product-oriented work breakdown structure, based on historical actual cost information to the maximum extent possible, and most importantly, based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which the Directorate has been successful.

The BY of the program is BY 2010 as a result of the approval of the Milestone C APB on January 31, 2011.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	2	2	2
Procurement	6	6	6
Total	8	8	8

## Cost and Funding

### Funding Summary

#### Appropriation and Quantity Summary FY2015 President's Budget / December 2013 SAR (TY\$ M)

Appropriation	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
RDT&E	2334.8	198.3	175.2	27.7	9.3	5.8	5.0	31.9	2788.0
Procurement	1056.7	397.1	6.6	15.3	29.0	23.0	16.5	172.3	1716.5
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2015 Total	3391.5	595.4	181.8	43.0	38.3	28.8	21.5	204.2	4504.5
PB 2014 Total	3455.5	566.1	68.6	30.4	23.0	22.1	15.9	69.2	4250.8
Delta	-64.0	29.3	113.2	12.6	15.3	6.7	5.6	135.0	253.7

Quantity	Undistributed	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	4	2	0	0	0	0	0	0	6
PB 2015 Total	2	4	2	0	0	0	0	0	0	8
PB 2014 Total	2	4	2	0	0	0	0	0	0	8
Delta	0	0	0	0	0	0	0	0	0	0



## Cost and Funding

### Annual Funding By Appropriation

#### Annual Funding TY\$

#### 3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY \$M	Non End Item Recurring Flyaway TY \$M	Non Recurring Flyaway TY \$M	Total Flyaway TY \$M	Total Support TY \$M	Total Program TY \$M
2002	--	--	--	--	--	--	51.5
2003	--	--	--	--	--	--	39.7
2004	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	21.2
2006	--	--	--	--	--	--	51.4
2007	--	--	--	--	--	--	195.2
2008	--	--	--	--	--	--	189.6
2009	--	--	--	--	--	--	354.0
2010	--	--	--	--	--	--	386.2
2011	--	--	--	--	--	--	399.5
2012	--	--	--	--	--	--	409.8
2013	--	--	--	--	--	--	236.7
2014	--	--	--	--	--	--	198.3
2015	--	--	--	--	--	--	175.2
2016	--	--	--	--	--	--	27.7
2017	--	--	--	--	--	--	9.3
2018	--	--	--	--	--	--	5.8
2019	--	--	--	--	--	--	5.0
2020	--	--	--	--	--	--	4.8
2021	--	--	--	--	--	--	4.7
2022	--	--	--	--	--	--	4.8
2023	--	--	--	--	--	--	5.1
2024	--	--	--	--	--	--	5.4
2025	--	--	--	--	--	--	3.1
2026	--	--	--	--	--	--	2.0
2027	--	--	--	--	--	--	2.0

Subtotal	2	--	--	--	--	--	2788.0
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**Annual Funding BY\$****3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway BY 2010 \$M</b>	<b>Non End Item Recurring Flyaway BY 2010 \$M</b>	<b>Non Recurring Flyaway BY 2010 \$M</b>	<b>Total Flyaway BY 2010 \$M</b>	<b>Total Support BY 2010 \$M</b>	<b>Total Program BY 2010 \$M</b>
2002	--	--	--	--	--	--	60.1
2003	--	--	--	--	--	--	45.7
2004	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	23.2
2006	--	--	--	--	--	--	54.6
2007	--	--	--	--	--	--	202.0
2008	--	--	--	--	--	--	192.4
2009	--	--	--	--	--	--	354.5
2010	--	--	--	--	--	--	381.9
2011	--	--	--	--	--	--	387.7
2012	--	--	--	--	--	--	390.8
2013	--	--	--	--	--	--	221.7
2014	--	--	--	--	--	--	182.7
2015	--	--	--	--	--	--	158.5
2016	--	--	--	--	--	--	24.6
2017	--	--	--	--	--	--	8.1
2018	--	--	--	--	--	--	4.9
2019	--	--	--	--	--	--	4.2
2020	--	--	--	--	--	--	3.9
2021	--	--	--	--	--	--	3.8
2022	--	--	--	--	--	--	3.8
2023	--	--	--	--	--	--	3.9
2024	--	--	--	--	--	--	4.1
2025	--	--	--	--	--	--	2.3
2026	--	--	--	--	--	--	1.5
2027	--	--	--	--	--	--	1.4
<b>Subtotal</b>	<b>2</b>	--	--	--	--	--	<b>2722.3</b>

The RDT&E Air Force funding profile above represents funding for satellites 1 and 2 as displayed in the associated

R-2A exhibit in the FY 2015 President's Budget (R-1 Line #225).

## Annual Funding TY\$

## 3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY \$M	Non End Item Recurring Flyaway TY \$M	Non Recurring Flyaway TY \$M	Total Flyaway TY \$M	Total Support TY \$M	Total Program TY \$M
2010	--	96.0	--	--	96.0	--	96.0
2011	--	--	--	--	--	--	--
2012	2	428.0	--	--	428.0	40.4	468.4
2013	2	459.3	--	--	459.3	33.0	492.3
2014	2	366.7	--	--	366.7	30.4	397.1
2015	--	0.5	3.5	--	4.0	2.6	6.6
2016	--	1.0	10.9	--	11.9	3.4	15.3
2017	--	1.2	12.8	--	14.0	15.0	29.0
2018	--	0.9	8.2	--	9.1	13.9	23.0
2019	--	0.3	--	--	0.3	16.2	16.5
2020	--	--	--	--	--	18.4	18.4
2021	--	--	--	--	--	17.0	17.0
2022	--	--	--	--	--	15.8	15.8
2023	--	--	--	--	--	15.7	15.7
2024	--	--	--	--	--	16.1	16.1
2025	--	--	--	--	--	16.5	16.5
2026	--	--	--	--	--	17.7	17.7
2027	--	--	--	--	--	17.5	17.5
2028	--	--	--	--	--	16.4	16.4
2029	--	--	--	--	--	13.2	13.2
2030	--	--	--	--	--	6.0	6.0
2031	--	--	--	--	--	2.0	2.0
<b>Subtotal</b>	<b>6</b>	<b>1353.9</b>	<b>35.4</b>	<b>--</b>	<b>1389.3</b>	<b>327.2</b>	<b>1716.5</b>

**Annual Funding BY\$****3020 | Procurement | Missile Procurement, Air Force**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway BY 2010 \$M</b>	<b>Non End Item Recurring Flyaway BY 2010 \$M</b>	<b>Non Recurring Flyaway BY 2010 \$M</b>	<b>Total Flyaway BY 2010 \$M</b>	<b>Total Support BY 2010 \$M</b>	<b>Total Program BY 2010 \$M</b>
2010	--	94.0	--	--	94.0	--	94.0
2011	--	--	--	--	--	--	--
2012	2	403.5	--	--	403.5	38.1	441.6
2013	2	421.4	--	--	421.4	30.2	451.6
2014	2	330.5	--	--	330.5	27.4	357.9
2015	--	0.4	3.1	--	3.5	2.3	5.8
2016	--	0.9	9.5	--	10.4	2.9	13.3
2017	--	1.0	10.9	--	11.9	12.8	24.7
2018	--	0.8	6.8	--	7.6	11.6	19.2
2019	--	0.2	--	--	0.2	13.3	13.5
2020	--	--	--	--	--	14.7	14.7
2021	--	--	--	--	--	13.4	13.4
2022	--	--	--	--	--	12.2	12.2
2023	--	--	--	--	--	11.9	11.9
2024	--	--	--	--	--	11.9	11.9
2025	--	--	--	--	--	12.0	12.0
2026	--	--	--	--	--	12.6	12.6
2027	--	--	--	--	--	12.2	12.2
2028	--	--	--	--	--	11.2	11.2
2029	--	--	--	--	--	8.8	8.8
2030	--	--	--	--	--	3.9	3.9
2031	--	--	--	--	--	1.3	1.3
<b>Subtotal</b>	<b>6</b>	<b>1252.7</b>	<b>30.3</b>	<b>--</b>	<b>1283.0</b>	<b>264.7</b>	<b>1547.7</b>

The Missile Procurement Air Force (MPAF) funding profile above represents funding for Space Vehicles (SV) 03-08 as displayed in the associated P-5 exhibit in the FY 2015 PB. MPAF funds for SV09+ are excluded above, but are reflected in the associated P-5 exhibit in the FY 2015 PB (P-1 Lines #18 and #19).

**Cost Quantity Information****3020 | Procurement | Missile Procurement, Air Force**

<b>Fiscal Year</b>	<b>Quantity</b>	<b>End Item Recurring Flyaway (Aligned with Quantity) BY 2010 \$M</b>
2010	--	--
2011	--	--
2012	2	417.6
2013	2	417.6
2014	2	417.5
2015	--	--
2016	--	--
2017	--	--
2018	--	--
2019	--	--
2020	--	--
2021	--	--
2022	--	--
2023	--	--
2024	--	--
2025	--	--
2026	--	--
2027	--	--
2028	--	--
2029	--	--
2030	--	--
2031	--	--
<b>Subtotal</b>	<b>6</b>	<b>1252.7</b>

## Low Rate Initial Production

There is no LRIP for this Program.



## **Foreign Military Sales**

None

## **Nuclear Costs**

None

## Unit Cost

### Unit Cost Report

	BY2010 \$M	BY2010 \$M	
Unit Cost	Current UCR Baseline (JAN 2011 APB)	Current Estimate (DEC 2013 SAR)	BY % Change

#### Program Acquisition Unit Cost (PAUC)

Cost	4142.9	4270.0	
Quantity	8	8	
Unit Cost	517.862	533.750	+3.07

#### Average Procurement Unit Cost (APUC)

Cost	1519.0	1547.7	
Quantity	6	6	
Unit Cost	253.167	257.950	+1.89

	BY2010 \$M	BY2010 \$M	
Unit Cost	Original UCR Baseline (MAY 2008 APB)	Current Estimate (DEC 2013 SAR)	BY % Change

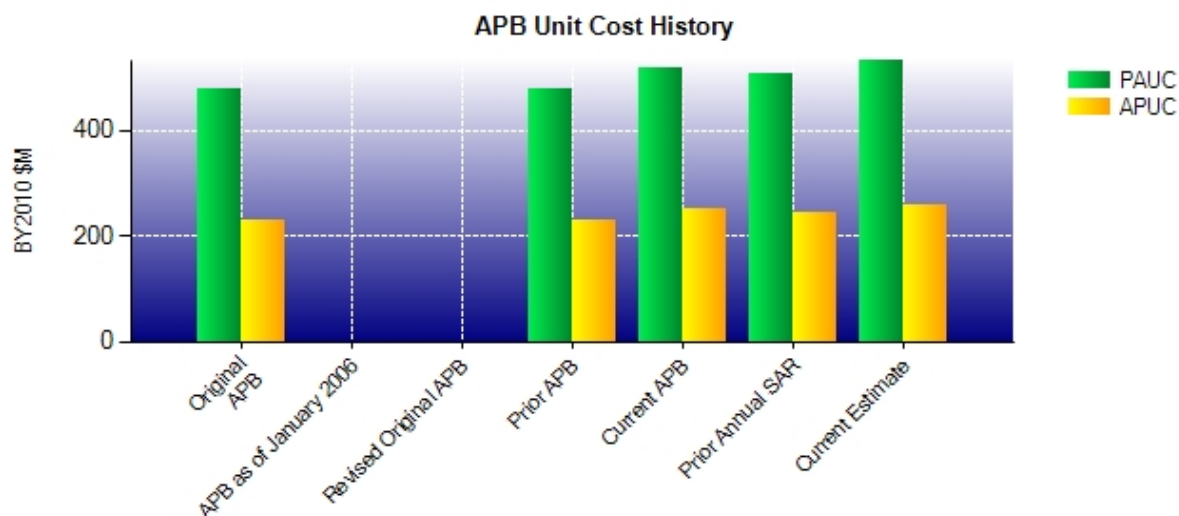
#### Program Acquisition Unit Cost (PAUC)

Cost	3840.8	4270.0	
Quantity	8	8	
Unit Cost	480.100	533.750	+11.17

#### Average Procurement Unit Cost (APUC)

Cost	1381.0	1547.7	
Quantity	6	6	
Unit Cost	230.167	257.950	+12.07

## Unit Cost History



	Date	BY2010 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	MAY 2008	480.100	230.167	500.288	248.383
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	MAY 2008	480.100	230.167	500.288	248.383
Current APB	JAN 2011	517.862	253.167	533.725	269.333
Prior Annual SAR	DEC 2012	506.412	244.000	531.350	268.033
Current Estimate	DEC 2013	533.750	257.950	563.062	286.083

## SAR Unit Cost History

### Initial SAR Baseline to Current SAR Baseline (TY \$M)

Initial PAUC Dev Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
500.288	-9.013	0.000	0.775	0.000	63.063	-9.513	-11.875	33.437	533.725

**Current SAR Baseline to Current Estimate (TY \$M)**

<b>PAUC Prod Est</b>	<b>Changes</b>								<b>PAUC Current Est</b>
	<b>Econ</b>	<b>Qty</b>	<b>Sch</b>	<b>Eng</b>	<b>Est</b>	<b>Oth</b>	<b>Spt</b>	<b>Total</b>	
533.725	6.288	0.000	0.000	0.000	-17.962	0.000	41.011	29.337	563.062

**Initial SAR Baseline to Current SAR Baseline (TY \$M)**

<b>Initial APUC Dev Est</b>	<b>Changes</b>								<b>APUC Prod Est</b>
	<b>Econ</b>	<b>Qty</b>	<b>Sch</b>	<b>Eng</b>	<b>Est</b>	<b>Oth</b>	<b>Spt</b>	<b>Total</b>	
248.383	-6.450	0.000	1.033	0.000	54.933	-12.733	-15.833	20.950	269.333

**Current SAR Baseline to Current Estimate (TY \$M)**

<b>APUC Prod Est</b>	<b>Changes</b>								<b>APUC Current Est</b>
	<b>Econ</b>	<b>Qty</b>	<b>Sch</b>	<b>Eng</b>	<b>Est</b>	<b>Oth</b>	<b>Spt</b>	<b>Total</b>	
269.333	5.533	0.000	0.000	0.000	-43.467	0.000	54.683	16.749	286.083

**SAR Baseline History**

<b>Item/Event</b>	<b>SAR Planning Estimate (PE)</b>	<b>SAR Development Estimate (DE)</b>	<b>SAR Production Estimate (PdE)</b>	<b>Current Estimate</b>
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	FEB 2008	FEB 2008	MAY 2008
Milestone C	N/A	SEP 2009	OCT 2010	JAN 2011
IOC	N/A	N/A	N/A	N/A
Total Cost (TY \$M)	N/A	4002.3	4269.8	4504.5
Total Quantity	N/A	8	8	8
Prog. Acq. Unit Cost (PAUC)	N/A	500.288	533.725	563.062

**Cost Variance**

<b>Summary Then Year \$M</b>				
	<b>RDT&amp;E</b>	<b>Proc</b>	<b>MILCON</b>	<b>Total</b>
SAR Baseline (Prod Est)	2653.8	1616.0	--	4269.8
Previous Changes				
Economic	+24.2	+44.7	--	+68.9
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-35.4	-218.7	--	-254.1
Other	--	--	--	--
Support	--	+166.2	--	+166.2
Subtotal	-11.2	-7.8	--	-19.0
Current Changes				
Economic	-7.1	-11.5	--	-18.6
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+152.5	-42.1	--	+110.4
Other	--	--	--	--
Support	--	+161.9	--	+161.9
Subtotal	+145.4	+108.3	--	+253.7
Adjustments	--	--	--	--
Total Changes	+134.2	+100.5	--	+234.7
CE - Cost Variance	2788.0	1716.5	--	4504.5
CE - Cost & Funding	2788.0	1716.5	--	4504.5

Summary Base Year 2010 \$M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	2623.9	1519.0	--	4142.9
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-36.6	-195.3	--	-231.9
Other	--	--	--	--
Support	--	+140.3	--	+140.3
Subtotal	-36.6	-55.0	--	-91.6
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+135.0	-40.7	--	+94.3
Other	--	--	--	--
Support	--	+124.4	--	+124.4
Subtotal	+135.0	+83.7	--	+218.7
Adjustments	--	--	--	--
Total Changes	+98.4	+28.7	--	+127.1
CE - Cost Variance	2722.3	1547.7	--	4270.0
CE - Cost & Funding	2722.3	1547.7	--	4270.0

Previous Estimate: December 2012

<b>RDT&amp;E</b>	<b>\$M</b>	
	<b>Base Year</b>	<b>Then Year</b>
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-7.1
Adjustment for current and prior escalation. (Estimating)	+5.9	+6.2
Increased cost for SV01 and SV02 development. (Estimating)	+143.9	+158.9
Budget reductions due to FY 2013 sequestration. (Estimating)	-25.4	-27.1
Reallocation of funding between SV01-08 and SV09+ (Estimating)	-3.3	-3.5
Increase due to additional launch and on-orbit support operations requirements. (Estimating)	+13.9	+18.0
<b>RDT&amp;E Subtotal</b>	<b>+135.0</b>	<b>+145.4</b>

<b>Procurement</b>	<b>\$M</b>	
	<b>Base Year</b>	<b>Then Year</b>
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	-11.5
Adjustment for current and prior escalation. (Estimating)	+9.6	+10.5
Below Threshold Reprogramming (BTR) to NAVSTAR GPS (Block IIF). (Estimating)	-18.9	-20.0
Budget reductions due to sequestration. (Estimating)	-1.8	-1.9
FY 2012-2014 Congressional reductions. (Estimating)	-9.0	-9.8
Increase due to adjustments for launch and checkout. (Estimating)	+13.3	+15.5
Reclassification of funds from flyaway to support. (Estimating)	-33.9	-36.4
Increase due to additional launch and on-orbit support requirements and reclassification of funds from flyaway to support. (Subtotal)	+123.9	+161.3
Increase due to reclassification of funds from flyaway to support. (Support)	(+34.0)	(+36.4)
Increase due to additional launch and on-orbit support requirements. (Support)	(+89.9)	(+124.9)
Adjustment for current and prior escalation. (Support)	+0.5	+0.6
<b>Procurement Subtotal</b>	<b>+83.7</b>	<b>+108.3</b>

## Contracts

### Appropriation: RDT&E

Contract Name	<b>Global Positioning System (GPS) III (Development)</b>
Contractor	Lockheed Martin Corporation
Contractor Location	Newtown, PA 18940
Contract Number, Type	FA8807-08-C-0010, CPIF/CPAF
Award Date	May 15, 2008
Definitization Date	May 15, 2008

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price at Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1249.1	N/A	2	1434.6	N/A	2	1850.8	1997.9

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional scope associated with the award of the GPS III Launch and Checkout Capability, associated information security upgrades, and additional costs as a result of immature technical requirements for parts and processes.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/23/2014)	-357.3	-37.6
Previous Cumulative Variances	-280.1	-29.1
Net Change	-77.2	-8.5

### Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to additional work by the Navigation Payload Element (NPE) Integrated Product Team (IPT). Specifically, the labor support required to work on the existing Mission Data Unit (MDU) scripts/Discrepancy Reports (DRs) and Software (SW) Test Equipment Integration issues continue to negatively impact cost. There were also unplanned resources required to address transmitter test failure discoveries in this IPT that impacted cost. The Space Vehicle (SV) bus IPT was also a contributor to the increased cost variance during this period. Additional resources were required to support SV bus hardware repairs, Scalable Power Regulation Unit (SPRU) testing and Remote Interface Unit (RIU) redesign efforts.

The unfavorable net change in the schedule variance is due to additional work by the Assembly Integration and Testing (AI&T) and NPE IPTs. The acoustic testing and thermal vacuum delays, resulting from the late Navigation Panel delivery, is causing schedule impacts in the AI&T IPT. The NPE IPT also experienced Qualification, MDU SW, and SV02 delays which resulted in a negative schedule impact.



**Appropriation: Procurement**

Contract Name	<b>Global Positioning System (GPS) III (Production)</b>
Contractor	Lockheed Martin Corporation
Contractor Location	Newtown, PA 18940
Contract Number, Type	FA8807-08-C-0010/2, CPIF
Award Date	May 15, 2008
Definitization Date	May 15, 2008

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price at Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
74.7	N/A	2	515.0	N/A	2	639.8	712.0

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the contract descope caused by an earlier contract modification incorrectly establishing the value of hours negotiated.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/23/2014)	-20.6	-14.6
Previous Cumulative Variances	-9.6	+16.1
Net Change	-11.0	-30.7

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to the delays and increased costs of material in both the BUS and Navigation Payload Element (NPE) Integrated Program Teams (IPTs).

The unfavorable net change in the schedule variance is due to the delays in the start of discrete support tasks associated with build of Space Vehicle (SV) 03 transmitters in the NPE IPTs.

**Contract Comments**

The Initial Contract Price increased from previously reported SAR to incorporate the award of the two production satellites, as the previous SAR reflected long lead items only.

The Estimated Price at Completion grew as a result of authorizing Space Vehicles 05/06.

**Appropriation: Procurement**

Contract Name	<b>GPS III Long Lead SV05-08</b>
Contractor	Lockheed Martin Corporation
Contractor Location	Newtown, PA 18940
Contract Number, Type	FA8807-13-C-0002, FPIF
Award Date	February 08, 2013
Definitization Date	February 08, 2013

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price at Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
119.5	N/A	4	119.5	N/A	4	119.6	119.7

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/27/2014)	+0.1	-3.1
Previous Cumulative Variances	--	--
Net Change	+0.1	-3.1

**Cost and Schedule Variance Explanations**

The favorable cumulative cost variance is due to the reallocation of accrued cost after finalization of the Firm Fixed Price contract in July 2013 and realized labor efficiencies.

The unfavorable cumulative schedule variance is due to the subcontractor's invoices not being received according to the baseline milestone payment plan. In addition, there have been material delays within the Space Vehicle bus Integrated Product Team (IPT).

**Contract Comments**

This is the first time this contract is being reported.

## Deliveries and Expenditures

Delivered to Date	Plan to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	2	0.00%
Production	0	0	6	0.00%
Total Program Quantity Delivered	0	0	8	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	4504.5	Years Appropriated	13
Expended to Date	2993.0	Percent Years Appropriated	43.33%
Percent Expended	66.44%	Appropriated to Date	3986.9
Total Funding Years	30	Percent Appropriated	88.51%

The above data is current as of 3/24/2014.

## Operating and Support Cost

### GPS III

#### Assumptions and Ground Rules

##### Cost Estimate Reference:

None

##### Sustainment Strategy:

None

##### Antecedent Information:

None

Unitized O&S Costs BY2010 \$K			
Cost Element	GPS III Avg Annual Cost for 24 Satellite Constellation	No Antecedant (Antecedent) No Antecedant	
Unit-Level Manpower	0.000		0.000
Unit Operations	0.000		0.000
Maintenance	0.000		0.000
Sustaining Support	0.000		0.000
Continuing System Improvements	0.000		0.000
Indirect Support	0.000		0.000
Other	0.000		0.000
Total	--		--

##### Unitized Cost Comments:

None

	Total O&S Cost \$M			
	Current Production APB Objective/Threshold		Current Estimate	
	GPS III		GPS III	No Antecedant (Antecedent)
Base Year	N/A	N/A	N/A	N/A
Then Year	N/A	N/A	N/A	N/A

##### Total O&S Costs Comments:

The GPS III program will provide O&S for on-orbit support through the Launch and On-Orbit Support (LOOS) contract. For SV01 and SV02, this is funded using RDT&E (3600) dollars and for SV03-08, procurement funds (3020) will be used. These costs are captured in the cost and funding section of the SAR and will not appear here. The O&S responsibility for the control system will be accomplished through the GPS Logistics Directorate within the Next Generation Operational Control System (OCX).

**Disposal Costs:**

None